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DEPT pass USTR (Chandler)

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DOE for Int'l and Policy (Person), IE-141 (Deutsch) and BPA  
(Atkins)

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TAGS: [EMIN](#) [ETRD](#) [ENRG](#) [KNNP](#) [CA](#)

SUBJECT: Canada's Uranium: A primer

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SUMMARY  
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1. Canada is the largest uranium producer in the world - in 2002 production was 11,607 metric tonnes of uranium, about one-third of total world production. Canada typically provides 20 to 30 percent of uranium used in the United States. The two main players are Cameco, a Canadian-based publicly traded company and COGEMA, the mining arm of the international nuclear group, AREVA. Despite low uranium prices in the late 1990's and early 2000's, these mining firms have invested in new mines and plants, and the development of new high-grade deposits means that Canadian producers are well positioned to capitalize on future market opportunities. With U.S. electric utilities looking to extend their existing plant operating licenses, increase ("uprate") their power output, and possibly build new nuclear plants, Canada's uranium deposits may become even more significant for U.S. energy interests in the coming years. Concern does exist within the Canadian uranium mining industry, however, that low uranium prices will curtail exploration and could scuttle plans to bring new deposits fully on line. End Summary.

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CANADA'S URANIUM DEPOSITS & PRODUCTION  
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2. Canada is the world's largest producer of uranium. In 2002, production, at 13,689 metric tonnes (t) of uranium oxide concentrate (representing 11,607 t Uranium), was about a third of total world production. Its value was about C\$ 600 million. All of the active mines, as well as the vast reserves, are located in the Athabasca basin region in the northernmost quarter of the province of Saskatchewan.

3. Canada's low cost uranium reserves (Reasonably Assured Resources plus Estimated Additional Resources) are 515,000 metric tonnes of uranium oxide (U3O8) (437,000 tonnes Uranium, 14 percent of world total). (Note that Australia has approximately double the reserves of Canada.)

4. Some C\$539 million (one C\$ currently equals approximately US\$0.74) was spent on uranium exploration in Canada from 1986 to 1997 and this led to a sharp increase in recoverable resources. Despite depletion from mining, resources have further increased slightly since 1997. Exploration expenditure in 1998 was C\$60 million, then \$49 million in 1999 and 2000, mostly at established projects.

5. Australia's uranium reserves are the world's largest, with 28% of the world's total (estimated at about 750,000 metric tonnes of uranium). Australia is the world's second-largest producer of uranium, responsible for about 19% of total global production in 2002, with 6888 metric tonnes of uranium. In 2002 the United States was the world's eighth ranked producer of uranium, producing 919 metric tonnes of uranium from mines (as opposed to use of HEU from former national military stockpiles).

6. Currently, Canada supplies 20 to 30 percent of uranium used in the United States - typically this is shipped to the United States as Uranium Hexafluoride, which is then enriched to become fuel for American light water reactors.

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THE MAJOR PLAYERS  
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7. Two producers account for over 90 percent of Canadian uranium production. Saskatoon, Saskatchewan-based Cameco is the largest producer in the world with 5479 metric tonnes of

uranium produced in Canada in 2002. Cameco was created in 1988 by the merger of two government corporations, the Saskatchewan Mining Development Corporation and El Dorado Nuclear Limited. Cameco is now fully owned by private investors after the government of Saskatchewan sold its 10 percent share in 2002. The company's 56 million shares are traded on the Toronto Stock Exchange (symbol - CCO) and the New York Stock Exchange (symbol - CCJ). Cameco also operates uranium mines in Wyoming and Nebraska. The company produces nuclear electricity as an owner of, and the sole fuel supplier to, Bruce Power's operating nuclear reactors in Ontario (four currently operating, two soon to re-start).

18. Uranium ore mined by Cameco in Saskatchewan is milled into "yellowcake" (a uranium oxide concentrate) at facilities also located in northern Saskatchewan. The milled "yellowcake" is then shipped to Cameco's refining plant at Blind River, Ontario and conversion plant at Port Hope, Ontario for processing into uranium dioxide for use as fuel in the Canadian built heavy-water "CANDU" reactors located in Canada, Korea, China, and elsewhere. The Port Hope facility also produces uranium hexafluoride which is shipped to the United States and elsewhere for enrichment into fuel for light-water reactors. The facility at Port Hope has a capacity to convert 12,500 metric tonnes of uranium per year into uranium hexafluoride.

19. COGEMA Resources Incorporated (CRI) is a wholly owned subsidiary of Paris-based COGEMA, itself wholly owned by the international nuclear industrial group, AREVA. CRI is the second largest producer of uranium in Canada, with 5425 metric tonnes of uranium produced in 2002. CRI's activities in Canada are limited to mining and milling uranium into yellowcake; CRI has no conversion facilities in Canada, but exports yellowcake for conversion and enrichment (to France and the United States). CRI's principal mines are McClean Lake, and its part ownership in the mines at Cigar Lake and McArthur River, all in Saskatchewan.

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NEW HIGH GRADE MINES STARTING TO PRODUCE  
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10. Canada is in the midst of a transition from second-generation uranium mines (started 1975-83) to new high-grade ones, all in northwestern Saskatchewan. In 1999-2000, mines at McArthur River and McClean Lake commenced production, producing some 3700 metric tonnes of uranium and 2300 tonnes of uranium respectively. Three more mines (Cigar Lake, Midwest and Dawn Lake) are planned. The Cigar Lake mine is closest to opening and is expected to produce 7000 metric tonnes of uranium annually once it is on line, around 2006.

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RECENT DEVELOPMENTS AFFECTING URANIUM INDUSTRY  
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11. Production at Cameco's McArthur River mine, said to be the world's largest, was temporarily suspended in April 2003 due to underground flooding. Cameco anticipates that production at McArthur River will resume in July 2003. The company forecasts that 2003 net earnings will decline by \$4 to \$5 million for every month the mine remains inoperable. However, Cameco expects to fully deliver on its 2003 sales contracts through its inventory and other supply sources.

12. The first labor dispute in the history of Canada's uranium mining industry ended after a brief, five-day work stoppage in June 2003. Unionized workers at CRI demanded wage increases to be on par with their counterparts at Cameco. Though still below Cameco pay levels, CRI workers negotiated a 10.5 percent increase in wages over a three-year term. The short stoppage is not expected to affect CRI's production forecasts.

13. CRI is currently appealing a September 2002 Canadian Federal Court ruling that cancelled their 1999 operating license for the McClean Lake project on the grounds that CRI had not conducted an adequate environmental review under the Canadian Environmental Assessment Act. In November 2002, the Federal Court of Appeal granted a stay of the previous decision while the case is appealed. Currently, the McClean Lake mine is operating under a four-year operating license issued in 2001 that increased the mine's production capacity up to 3600 metric tonnes of U308 per year. A shutdown of the McClean Lake mine would eliminate a significant portion of CRI's current uranium production.

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SECURITY OF URANIUM SUPPLY WILL REQUIRE PRICE INCREASE  
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14. It is not a sure bet, however, that Cigar Lake, Midwest and Dawn lake will come on stream as scheduled - or that other new resources will be developed. During a speech to investors in March 2003, the CEO of Cameco, Gerald Grandey,

noted that forecast uranium production will fall short of the uranium market's requirements by 300 million pounds over the next 10 years. Although secondary sources (such as inventory from ex-military stockpiles) do provide a significant amount of uranium for fuel, this contribution, according to uranium industry advocates, is still not sufficient to make up the shortfall in uranium supply. Grandey's analysis is that the capital investment needed to cover the deficit "will require higher sustained prices" and that he is "convinced it is a case of when, not if, prices improve." Currently, the spot price of uranium is recovering from an historic low of US\$7 per pound in 2000 to almost US\$11 per pound currently (though far from the high-water marks of US\$16 per pound in 1988 and 1996).

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COMMENT  
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15. Canada's high-grade uranium deposits in northern Saskatchewan offer a secure fuel supply for American nuclear power plants. To ensure that known deposits are brought to production, and to encourage further exploration will, however, require an increase in the price of uranium, according to industry analysts. GoC officials and industry contacts remain interested in maintaining a close dialogue with USG in order to address important uranium market issues and presumably to encourage uranium industry investment in mines and exploration.

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